UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
2162	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	**Applicant(s)**
Office Action Summary	10/790,657	KEKRE ET AL.
	Examiner	**Art Unit**	
	JEAN B. FLEURANTIN	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

1.   This is in response to the amendment filed on 02/11/2005.

The following is the status of claims:

Claims 1-31 remain pending for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 24 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: "*modifying data of a data volume to create modified data; a primary node transmitting the modified data to a first secondary node, the first secondary node receiving and processing the modified data to generate processed data; the primary node receiving and transmitting the processed data to a second secondary node, wherein the second secondary node comprises a second replica of the data volume*".

The dependent claims 25-30 are rejected under the same rational.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-31 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As set forth in MPEP 2106:

As per independent claims 13 and 31

The independent claim 13 is directed to a computer readable *medium*, in which storing instructions executable by a computer system, wherein the computer system is contained in a first secondary node in data. The claimed steps are not being performed by any form computer hardware component. Therefore, the mechanism storage managers using configuration maps to translate IO transactions and a logical memory block as the purpose of the invention. The claimed, "system" and "*medium*" fail to fall with one of four statutory categories of invention, process, machine, manufacture and composition, and is software per se.

As per independent claim 23

The independent claim 23 is directed to a data system, in which a primary node in data communication with first and second secondary nodes via first and second communication links. The claimed steps are not being performed by any form computer hardware component. Therefore, the mechanism storage managers using configuration maps to translate IO transactions and a logical memory block as the purpose of the invention. The claimed, "system" fails to fall with one of four statutory categories of invention, process, machine, manufacture and composition, since it fails to produce a useful and tangible result.

The dependent claims are rejected under the same rational.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for

the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 24-31 are rejected under 35 U.S.C. 102(a) as being anticipated by applicant admitted

prior art, specification - background, page 1, paragraph [0001] to page 7, paragraph [0017] ("APA").

As per claim 24, APA discloses a method comprising:

"processing data at a secondary node, wherein the secondary node comprises a replica of a first

data" (i.e., secondary host including applications configuring to generate transactions and replicating

data; see page 5, paragraph [0013], lines 15-19 see Fig. 1);

"transmitting the results of the data processing to a primary node" (see page 2, lines 3-4),

"wherein the primary node comprises the first data" (i.e., RVA and RVS maintaining copies; see page 3,

paragraph [0008], lines 7-9);

"storing the results of the data processing in memory" (i.e., storing identical data; see page 4,

lines 10-12).

As per claims 25-30, the limitations of claims 25-30 are similar to claims 2-12, therefore, the

limitations of claims 25-30 are rejected in the analysis of claims 2-12, and these claims are rejected on

that basis.

As per claim 31, APA discloses "a computer readable medium executable by a computer system of a secondary node, wherein the computer system implements a method in response to executing the Instructions" (i.e., secondary host including applications configuring to generate transactions and replicating data; see page 5, paragraph [0013], lines 15-19 see Fig. 1), the method comprising:

"processing data, wherein the secondary node comprises a replica of a first data" (i.e., secondary nodes storing contents of replica of RVA (first node); see page 5, paragraph [0013], lines 11-14 and Fig. 1, items RVA and RVS);

"transmitting the results of the data processing to a primary node" (see page 2, lines 3-4), "wherein the primary node comprises the first data" (i.e., RVA and RVS maintaining copies; see page 3, paragraph [0008], lines 7-9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant admitted prior art, background of the specification, pages 1-7 ("APA") in view of U.S. Pat. No. 5,742,792 issued to Yanai et al., ("Yanai"), and further in view of U.S. Pat. No. 7,149,858 issued to Kiselev ("Keselev").

As per claim 1, APA discloses "method comprising modifying data of a data volume to create modified data" (i.e., modified data of volume (V); see page 6, paragraph [0015], lines 1-2);

"a primary node transmitting the modified data to a first secondary node" (i.e., modified data transmitted from primary node P to each of the secondary nodes SS and AS; see page 6, paragraph [0015], lines 1-3), "wherein the first secondary node comprises a first replica of the data volume" (i.e.,

secondary nodes storing contents of replica of RVA (first node); see page 5, paragraph [0013], lines 11-14 and.Fig. 1, items RVA and RVS);

"the first secondary node receiving and processing the modified data" (i.e., the secondary nodes AS and SS receiving a copy of each logical block volume (V) containing modified data; see page 6, paragraph [0015], lines 5-8)

"the first secondary node transmitting the processed data to the primary node" (i.e., directing request to secondary nodes AS or SS, reading and returning a copy of requested data from replica RVA or RVS (primary nodes); see page 2, lines 2-4 and Fig. 1),

"the primary node receiving and transmitting the processed data to a second secondary node" (i.e., requests from client computer systems are redirected to the secondary nodes AS or SS; see page 1, paragraph [0002], lines 10-11 and Fig. 1), "wherein the second secondary node comprises a second replica of the data volume" (i.e., replicas, creating, modifying and maintaining at remotely located secondary nodes; see page 1, paragraph [0002], lines 5-8 and Fig. 1);

APA fails to explicitly disclose generate processed data. However discloses Yanai discloses generate processed data (see Yanai col. 33, line 58 to col. 34, line 51).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of APA by generating processed data as disclosed by Yanai (see Yanai, col. 34, lines 15-23 and Figs 13A and 13B). Such a modification would allow the method of APA to provide a data processing system which automatically and asynchronously, with respect to a first host system, generate and maintains a back-up copy of a primary storage device at a location physically remote from the primary storage device, without intervention from the host which seriously degrades the performance of the data transfer link between the primary host computer and the primary storage device (see Yanai col. 2, lines 19-26), thereby, improving the accuracy and the reliability of the efficient operations using assistance from secondary site.

While the combination of APA/Yanai substantially discloses the claimed invention, the combination fails to disclose in detail the second secondary node receiving and storing the processed data in memory. However, Kiselev discloses the second secondary node receiving and storing the

processed data in memory (see Kiselev col. 4, lines 51-67). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method of APA/Yanai by receiving and storing the processed data in memory as disclosed by Kiselev (see Kiselev col. 4, lines 65-67). Such a modification would allow the method of APA/Yanai to provide increased data reliability (see Kiselev col. 2, lines 6-7).

As per claim 2, APA further discloses "the first secondary node overwriting data of the first replica with the modified data" (i.e., directing request to secondary nodes AS or SS, reading and returning a copy of requested data from replica RVA or RVS (primary nodes); see page 2, lines 2-4 and Fig. 1).

As per claim 3, APA discloses "the first secondary node processes the modified data according to a data compression algorithm" (page 7, paragraph [0017]).

As per claim 4, APA further discloses "the first secondary node reading data from the first replica in response to receiving the modified data from the primary node; the first secondary node processing the modified data and the data read from the first replica according to the data compression algorithm to generate the processed data" (i.e., data compression algorithm generating the processed data; see page 7, paragraph [0017]).

As per claim 5, APA discloses "the first secondary node processes the modified data according to a checksum algorithm" (i.e., a checksum summing; see page 7, paragraph [0017], lines 1-3).

As per claim 6, APA further discloses "the first secondary node reading data from the first replica in response to receiving the modified data from the primary node; the first secondary node processing the modified data and the data read from the first replica according to the checksum algorithm to generate the processed data" (see page 7, paragraph [0017], lines 1-6).

As per claim 7, APA discloses "the first secondary node processes the modified data according to a data encryption algorithm" (see page 7, paragraph [0017], lines 1-3).

As per claim 8, APA discloses "the first secondary node processes the modified data according to a difference computation algorithm" (see page 7, paragraph [0017], lines 1-3).

As per claim 9, APA further discloses "the first secondary node reading data from the first replica in response to receiving the modified data from the primary node" (see page 5, paragraph [0013], lines 11-14 and Fig. 1); "the first secondary node processing the modified data and the data read from the first replica according to the difference computation algorithm to generate the processed data" (see page 7, paragraph [0017], lines 1-3).

As per claim 10, APA further discloses "the primary node transmits the modified data to the first secondary node via a first communication link, wherein the primary node transmits the processed data to the second secondary node via a second communication link, wherein the first communication link is defined by a first data transmission bandwidth, wherein the second communication link is defined by a second data transmission bandwidth, and wherein the first data transmission bandwidth is greater than the second data transmission bandwidth" (see Fig. 1 and pages 1-2, paragraph [0002] and see page 7, paragraph [0017])

As per claims 11 and 12, APA discloses "the first replica is maintained as a synchronous replica of the data volume, and wherein the second replica is maintained as an asynchronous replica of the data volume" (see Fig. 1 and pages 1-2, paragraph [0002]).

As per claims 13-22, the limitations of claims 13-22 are similar to claims 1-12, therefore, the limitations of claims 13-22 are rejected in the analysis of claims 1-12, and these claims are rejected on that basis.

As per claim 23, the limitations of claim 23 are similar to claim 1, therefore, the limitations of claim 23 are rejected in the analysis of claim 1, and this claim is rejected on that basis.

Response to Arguments / Remarks

Applicant's arguments filed 5/21/2007, with respect to the rejection(s) of claim(s) 1-31 under 35 U.S.C. 101 have been fully considered and are persuasive. Therefore, the rejection of claims 1-12 has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kiselev (USPN 7,149,858).

And 35 U.S.C. 101 rejection of claims 13-31.

CONTACT INFORMATION

2.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEAN B. FLEURANTIN whose telephone number is 571-272-4035. The examiner can normally be reached on 7:05 to 4:35.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BREENE can be reached on 571-272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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